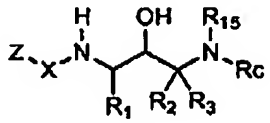
The Listing of Claims

This listing of claims will replace all prior versions and listings of claims in the application.

1. (Original) A compound of the formula I:



(I)

or pharmaceutically acceptable salts thereof, wherein

Z is hydrogen, $(C_3\text{-}C_7$ cycloalkyl$)_{0\text{-}1}(C_1\text{-}C_6$ alkyl$)$-, $(C_3\text{-}C_7$ cycloalkyl$)_{0\text{-}1}(C_2\text{-}C_6$ alkenyl$)$-, alkoxyalkoxyalkyl, $(C_3\text{-}C_7$ cycloalkyl$)_{0\text{-}1}(C_2\text{-}C_6$ alkynyl$)$- or $(C_3\text{-}C_7$ cycloalkyl$)$-, wherein each of said groups is optionally substituted with 1, 2, or 3 R_Z groups, wherein 1 or 2 methylene groups within said $(C_3\text{-}C_7$ cycloalkyl$)_{0\text{-}1}(C_1\text{-}C_6$ alkyl$)$-, $(C_3\text{-}C_7$ cycloalkyl$)_{0\text{-}1}(C_2\text{-}C_6$ alkenyl$)$-, $(C_3\text{-}C_7$ cycloalkyl$)_{0\text{-}1}(C_2\text{-}C_6$ alkynyl$)$- or $(C_3\text{-}C_7$ cycloalkyl$)$- groups are optionally replaced with -(C=O)-;

wherein R_Z at each occurrence is independently halogen, -OH, -SH, -CN, $-CF_3$, $-OCF_3$, $C_1\text{-}C_6$ alkoxy, $C_3\text{-}C_7$ cycloalkyl, $C_3\text{-}C_7$ cycloalkoxy or $-NR_{100}R_{101}$;

where R_{100} and R_{101} are independently H, $C_1\text{-}C_6$ alkyl, phenyl, $CO(C_1\text{-}C_6$ alkyl$)$ or $SO_2C_1\text{-}C_6$ alkyl;

X is -(C=O)-, -(C=S)- $-(SO_2)$-;

R_1 is $C_1\text{-}C_{10}$ alkyl optionally substituted with 1, 2, or 3 groups independently selected from halogen, -OH, =O, -SH, -CN, $-CF_3$, $-OCF_3$, $-C_{3\text{-}7}$ cycloalkyl, $-C_1\text{-}C_4$ alkoxy, amino, mono-dialkylamino, aryl, heteroaryl, and heterocycloalkyl, wherein each aryl group is optionally substituted with 1, 2 or 3 R_{50} groups;

R_{50} is selected from halogen, OH, SH, CN, $-CO\text{-}(C_1\text{-}C_4$ alkyl$)$, $-NR_7R_8$, $-S(O)_{0\text{-}2}\text{-}(C_1\text{-}C_4$ alkyl$)$, $C_1\text{-}C_6$ alkyl, $C_2\text{-}C_6$ alkenyl, $C_2\text{-}C_6$ alkynyl, $C_1\text{-}C_8$ alkoxy, -O-benzyl, alkenyloxy, alkoxyalkoxyalkoxy, and $C_3\text{-}C_8$ cycloalkyl;

wherein the alkyl, alkenyl, alkynyl, alkoxy and cycloalkyl groups are optionally substituted with 1 or 2 substituents independently selected from $C_1\text{-}C_4$ alkyl, halogen, OH, $-NR_5R_6$, CN, $C_1\text{-}C_4$ haloalkoxy, NR_7R_8, and $C_1\text{-}C_4$ alkoxy;

R_5 and R_6 are independently H or $C_1\text{-}C_6$ alkyl; or

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R_5 and R_6 and the nitrogen to which they are attached form a 5 or 6 membered heterocycloalkyl ring; and

R_7 and R_8 are independently selected from H; -C_1-C_4 alkyl optionally substituted with 1, 2, or 3 groups independently selected from -OH, -NH_2, and halogen; -C_3-C_6 cycloalkyl; -(C_1-C_4 alkyl)-O-(C_1-C_4 alkyl); -C_2-C_4 alkenyl; and -C_2-C_4 alkynyl;

wherein each heteroaryl is optionally substituted with 1 or 2 R_{50} groups;

wherein each heterocycloalkyl group is optionally substituted with 1 or 2 groups that are independently R_{50} or =O;

R_2 and R_3 are independently selected from

-H;

-F;

-C_1-C_6 alkyl optionally substituted with a substituent selected from -F, -OH, -C≡N, -CF_3, C_1-C_3 alkoxy, and –NR_5R_6;

-$(CH_2)_{0-2}$-R_{17};

-$(CH_2)_{0-2}$-R_{18};

-C_2-C_6 alkenyl or C_2-C_6 alkynyl, wherein each is optionally substituted with an indepdent substituent selected from -F, -OH, , -C≡N, -CF_3 and C_1-C_3 alkoxy;

-$(CH_2)_{0-2}$-C_3-C_7 cycloalkyl, optionally substituted an independent substituent selected from -F, -OH, , -C≡N, -CF_3, C_1-C_3 alkoxy and –NR_5R_6; or

wherein R_2, R_3 and the carbon to which they are attached form a carbocycle of three thru seven carbon atoms, wherein one carbon atom is optionally replaced by a group selected from –O-, -S-, -SO_2-, or -NR_7-;

where R_{17} at each occurrence is an aryl group selected from phenyl, 1-naphthyl, 2-naphthyl , indanyl, indenyl, dihydronaphthyl and tetralinyl, wherein said aryl groups are optionally substituted with one or two groups that are independently

-C_1-C_3 alkyl; -C_1-C_4 alkoxy; CF_3; or

-C_2-C_6 alkenyl or -C_2-C_6 alkynyl each of which is optionally substituted with one substituent selected from F, OH, C_1-C_3 alkoxy; or

-halogen;

-OH;

-C≡N;

-C_3-C_7 cycloalkyl;

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-CO-(C_1-C_4 alkyl);

-SO_2-(C_1-C_4 alkyl);

where R_{16} is a heteroaryl group selected from pyridinyl, pyrimidinyl, quinolinyl, indolyl, pryidazinyl, pyrazinyl, isoquinolyl, quinazolinyl, quinoxalinyl, phthalazinyl; imidazolyl, isoxazolyl, oxazolyl, thiazolyl, furanyl, thienyl, pyrrolyl, oxadiazolyl or thiadiazolyl, wherein each of said heteroaryl groups is optionally substituted with one or two groups that are independently

-C_1-C_6 alkyl optionally substituted with one substituent selected from OH, C≡N, CF_3, C_1-C_3 alkoxy, and -NR_5R_6;

wherein R_{15} is selected from hydrogen, C_1-C_6 alkyl, C_1-C_6 alkoxy, C_1-C_6 alkoxy C_1-C_6 alkyl, hydroxy C_1-C_6 alkyl, halo C_1-C_6 alkyl, benzyl, -$C(O)_2$-benyl, and alkoxycarbonyl, wherein the alkyl and phenyl portion of each is unsubstituted or substituted with 1, 2, 3, or 4 groups independently selected from halogen, C_1-C_6 alkyl, hydroxy, C_1-C_6 alkoxy, NH_2, and -R_{26}-R_{27};

wherein R_{26} is selected from a bond, –C(O)-, -SO_2-, -CO_2-, -$C(O)NR_5$-, and -$NR_5C(O)$-,

wherein R_{27} is selected from C_1-C_6 alkyl, C_1-C_6 alkoxy, aryl C_1-C_6 alkyl, heterocycloalkyl, and heteroaryl, wherein each of the above is unsubstituted or substituted with 1, 2, 3, 4, or 5 groups that are independently C_1-C_4 alkyl, C_1-C_4 alkoxy, halogen, haloalkyl, hydroxyalkyl, -NR_5R_6, -$C(O)NR_5R_6$;

wherein R_C is selected from

-$(CH_2)_{0-3}$-(C_3-C_8) cycloalkyl wherein the cycloalkyl is optionally substituted with 1, 2, or 3 groups independently selected from -R_{205}, and -CO_2-(C_1-C_4 alkyl);

-$(CR_{245}R_{250})_{0-4}$-aryl;

-$(CR_{245}R_{250})_{0-4}$-heteroaryl;

-$(CR_{245}R_{250})_{0-4}$-heterocycloalkyl;

-$(CR_{245}R_{250})_{0-4}$-aryl-heteroaryl;

-$(CR_{245}R_{250})_{0-4}$-aryl-heterocycloalkyl;

-$(CR_{245}R_{250})_{0-4}$-aryl-aryl;

-$(CR_{245}R_{250})_{0-4}$-heteroaryl-aryl;

-$(CR_{245}R_{250})_{0-4}$-heteroaryl-heterocycloalkyl;

-$(CR_{245}R_{250})_{0-4}$-heteroaryl-heteroaryl;

-$(CR_{245}R_{250})_{0-4}$-heterocycloalkyl-heteroaryl;

-$(CR_{245}R_{250})_{0-4}$-heterocycloalkyl-heterocycloalkyl;

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-$(CR_{245}R_{250})_{0-4}$-heterocycloalkyl-aryl;

- a monocyclic or bicyclic ring of 5, 6, 7 8, 9, or 10 carbons fused to 1 or 2 aryl, heteroaryl, or heterocycloalkyl groups wherein 1, 2 or 3 carbons of the monocyclic or bicyclic ring is optionally replaced with

-NH,

$-N(CO)_{0-1}R_{215}$,

$-N(CO)_{0-1}R_{220}$,

-O, or

$-S(=O)_{0-2}$,

and wherein the monocyclic or bicyclic ring is optionally substituted with 1, 2 or 3 groups that are independently $-R_{205}$, $-R_{245}$, $-R_{250}$ or =O;

$-C_2$-C_8 alkenyl optionally substituted with 1, 2, or 3 R_{205} groups;

$-C_2$-C_8 alkynyl optionally substituted with 1, 2, or 3 R_{205} groups;

wherein each aryl group attached directly or indirectly to the $-(CR_{245}R_{250})_{0-4}$ group is optionally substituted with 1, 2, 3 or 4 R_{200} groups;

wherein each heteroaryl group attached directly or indirectly to the $-(CR_{245}R_{250})_{0-4}$ group is optionally substituted with 1, 2, 3, or 4 R_{200};

wherein each heterocycloalkyl attached directly or indirectly to the $-(CR_{245}R_{250})_{0-4}$ group is optionally substituted with 1, 2, 3, or 4 R_{210};

wherein R_{200} at each occurrence is independently selected from

$-C_1$-C_6 alkyl optionally substituted with 1, 2, or 3 R_{205} groups;

-OH;

$-NO_2$;

-halogen;

-C≡N;

-CHO;

$-(CH_2)_{0-4}$-CO-$NR_{220}R_{225}$;

$-(CH_2)_{0-4}$-CO-(C_1-C_8 alkyl);

$-(CH_2)_{0-4}$-CO-(C_2-C_8 alkenyl);

$-(CH_2)_{0-4}$-CO-(C_2-C_8 alkynyl);

$-(CH_2)_{0-4}$-CO-(C_3-C_7 cycloalkyl);

$-(CH_2)_{0-4}$-$(CO)_{0-1}$-aryl;

$-(CH_2)_{0-4}$-$(CO)_{0-1}$-heteroaryl;

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-$(CH_2)_{0-4}$-$(CO)_{0-1}$-heterocycloalkyl;
-$(CH_2)_{0-4}$-CO_2R_{215};
-$(CH_2)_{0-4}$-SO_2-$NR_{220}R_{225}$;
-$(CH_2)_{0-4}$-$S(O)_{0-2}$-(C_1-C_8 alkyl);
-$(CH_2)_{0-4}$-$S(O)_{0-2}$-(C_3-C_7 cycloalkyl);
-$(CH_2)_{0-4}$-N(H or R_{215})-CO_2R_{215};
-$(CH_2)_{0-4}$-N(H or R_{215})-SO_2-R_{220};
-$(CH_2)_{0-4}$-N(H or R_{215})-CO-$N(R_{215})_2$;
-$(CH_2)_{0-4}$-N(-H or R_{215})-CO-R_{220};
-$(CH_2)_{0-4}$-$NR_{220}R_{225}$;
-$(CH_2)_{0-4}$-O-CO-(C_1-C_8 alkyl);
-$(CH_2)_{0-4}$-O-(R_{215});
-$(CH_2)_{0-4}$-S-(R_{215});
-$(CH_2)_{0-4}$-O-(C_1-C_8 alkyl optionally substituted with 1, 2, 3, or 5 -F);
-C_2-C_8 alkenyl optionally substituted with 1 or 2 R_{205} groups;
-C_2-C_8 alkynyl optionally substituted with 1 or 2 R_{205} groups;
and
-$(CH_2)_{0-4}$- C_3-C_7 cycloalkyl;

wherein each aryl group included within R_{200} is optionally substituted with 1, 2, or 3 groups that are independently

-R_{205},
-R_{210} or
-C_1-C_8 alkyl substituted with 1, 2, or 3 groups that are independently R_{205} or R_{210};

wherein each heterocycloalkyl group included within R_{200} is optionally substituted with 1, 2, or 3 groups that are independently R_{210};

wherein each heteroaryl group included within R_{200} is optionally substituted with 1, 2, or 3 groups that are independently

-R_{205},
-R_{210}, or
-C_1-C_8 alkyl substituted with 1, 2, or 3 groups that are independently
-R_{205} or
-R_{210};

wherein R_{205} at each occurrence is independently selected from

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-C_1-C_6 alkyl,
-C_2-C_8 alkenyl,
-C_2-C_8 alkynyl,
-C_1-C_6 haloalkoxy,
-$(CH_2)_{0-3}$(C_3-C_7 cycloalkyl)
-halogen,
-$(CH_2)_{0-6}$-OH,
-O-phenyl,
-alkenyl-phenyl,
-SH,
-$(CH_2)_{0-6}$-C≡N,
-$(CH_2)_{0-6}$-C(=O)$NR_{235}R_{240}$
-CF_3,
-$C(O)_2$-benzyl,
-C_1-C_6 alkoxy, and
-$NR_{235}R_{240}$,

wherein R_{210} at each occurrence is independently selected from
-C_1-C_6 alkyl optionally substituted with 1, 2, or 3 R_{205} groups;
-C_2-C_8 alkenyl optionally substituted with 1, 2, or 3 R_{205} groups;
-C_2-C_8 alkynyl optionally substituted with 1, 2, or 3 R_{205} groups;
-halogen;
-C_1-C_6 alkoxy;
-C_1-C_6 haloalkoxy;
-$NR_{220}R_{225}$;
-OH;
-C≡N;
-C_3-C_7 cycloalkyl optionally substituted with 1, 2, or 3 R_{205} groups;
-CO-(C_1-C_4 alkyl);
-$SO_2NR_{235}R_{240}$;
-CO-$NR_{235}R_{240}$;
-SO_2-(C_1-C_4 alkyl); and
=O; wherein

wherein R_{215} at each occurrence is independently selected from

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-C_1-C_6 alkyl,
-$(CH_2)_{0-2}$-(aryl),
-C_2-C_6 alkenyl,
-C_2-C_6 alkynyl,
-C_3-C_7 cycloalkyl,
-$(CH_2)_{0-2}$-(heteroaryl), and
-$(CH_2)_{0-2}$-(heterocycloalkyl);

wherein the aryl group included within R_{215} is optionally substituted with 1, 2, or 3 groups that are independently

-R_{205} or

-R_{210};

wherein the heterocycloalkyl group included within R_{215} is optionally substituted with 1, 2, or 3 R_{210};

wherein each heteroaryl group included within R_{215} is optionally substituted with 1, 2, or 3 R_{210};

wherein R_{220} and R_{225} at each occurrence are independently selected from
-H,
-C_1-C_6 alkyl,
-hydroxy C_1-C_6 alkyl,
-amino C_1-C_6 alkyl,
-halo C_1-C_6 alkyl,
-$(CH_2)_{0-2}$-(C_3-C_7 cycloalkyl),
-(C_1-C_6 alkyl)-O-(C_1-C_3 alkyl),
-C_2-C_6 alkenyl,
-C_2-C_6 alkynyl,
-aryl,
-heteroaryl, and
-heterocycloalkyl;
wherein the aryl, heteroaryl or heterocycloalkyl group included within R_{220} and R_{225} is optionally substituted with 1, 2, or 3 R_{270} groups,
wherein R_{270} at each occurrence is independently

-R_{205},

-C_1-C_6 alkyl optionally substituted with 1, 2, or 3 R_{205} groups;

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-C_2-C_8 alkenyl optionally substituted with 1, 2, or 3 R_{205} groups;

-C_2-C_8 alkynyl optionally substituted with 1, 2, or 3 R_{205} groups;

-halogen;

-C_1-C_8 alkoxy;

-C_1-C_8 haloalkoxy;

-$NR_{235}R_{240}$;

-OH;

-C≡N;

-C_3-C_7 cycloalkyl optionally substituted with 1, 2, or 3 R_{205} groups;

-CO-(C_1-C_4 alkyl);

-SO_2-$NR_{235}R_{240}$;

-CO-$NR_{235}R_{240}$;

-SO_2-(C_1-C_4 alkyl); and

=O;

wherein R_{235} and R_{240} at each occurrence are independently

-H, or

-C_1-C_8 alkyl;

-phenyl

wherein R_{245} and R_{250} at each occurrence are independently selected from

-H,

-$(CH_2)_{0-4}CO_2C_1$-C_4 alkyl

-$(CH_2)_{0-4}C(=O)C_1$-C_4 alkyl

-C_1-C_4 alkyl,

-C_1-C_4 hydroxyalkyl,

-C_1-C_4 alkoxy,

-C_1-C_4 haloalkoxy,

-$(CH_2)_{0-4}$-C_3-C_7 cycloalkyl,

-C_2-C_6 alkenyl,

-C_2-C_6 alkynyl,

-$(CH_2)_{0-4}$ aryl,

-$(CH_2)_{0-4}$ heteroaryl, and

-$(CH_2)_{0-4}$ heterocycloalkyl, or

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wherein R_{245} and R_{250} are taken together with the carbon to which they are attached to form a monocycle or bicycle of 3, 4, 5, 6, 7, 8, 9, or 10 carbon atoms, optionally where 1 or 2 carbon atoms is replaced by a heteroatom selected from

-O-,

-S-,

$-SO_2-$, and

$-NR_{220}-$; or wherein a $-CH_2-$ group is replaced with a -C(O)- group;

wherein the aryl, heteroaryl or heterocycloalkyl group included within R_{245} and R_{250} is optionally substituted with 1, 2, or 3 groups that are independenly halogen, C_{1-6} alkyl, CN or OH.

2. (Original) A compound according to claim 1, wherein Z is $(C_3-C_7$ cycloalkyl$)_{0-1}(C_1-C_8$ alkyl)-, $(C_3-C_7$ cycloalkyl$)_{0-1}(C_2-C_8$ alkenyl)-, $(C_3-C_7$ cycloalkyl$)_{0-1}(C_2-C_8$ alkynyl)- or $(C_3-C_7$ cycloalkyl)-, wherein each of said groups is optionally substituted with 1, 2, or 3 R_Z groups:

wherein, R_Z at each occurrence is independently halogen, -OH, -CN, C_1-C_6 alkoxy, C_3-C_7 cycloalkyl, C_3-C_7 cycloalkoxy, $-NR_{100}R_{101}$;

where R_{100} and R_{101} are independently H, C_1-C_8 alkyl, phenyl, $CO(C_1-C_8$ alkyl) or $SO_2C_1-C_8$ alkyl.

3. (Original) A compound according to claim 1, wherein X is –(C=O)-.

4. (Original) A compound according to claim 3, wherein Z is H.

5. (Original) A compound according to claim 1, wherein R_1 is C_1-C_{10} alkyl optionally substituted with 1 or 2 groups independently selected from halogen, -OH, =O, $-CF_3$, $-OCF_3$, $-C_{3-7}$ cycloalkyl, $-C_1-C_4$ alkoxy, amino or aryl, wherein the aryl group is optionally substituted with 1 or 2 R_{50} groups;

wherein R_{50} is selected from halogen, OH, $-CO-(C_1-C_4$ alkyl), $-NR_7R_8$, C_1-C_8 alkyl, C_1-C_8 alkoxy and C_3-C_8 cycloalkyl;

wherein the alkyl, alkoxy and cycloalkyl groups are optionally substituted with 1 or 2 substituents independently selected from C_1-C_4 alkyl, halogen, OH, $-NR_6R_6$, NR_7R_8, and C_1-C_4 alkoxy;

wherein R_6 and R_8 at are independently H or C_1-C_8 alkyl; or

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